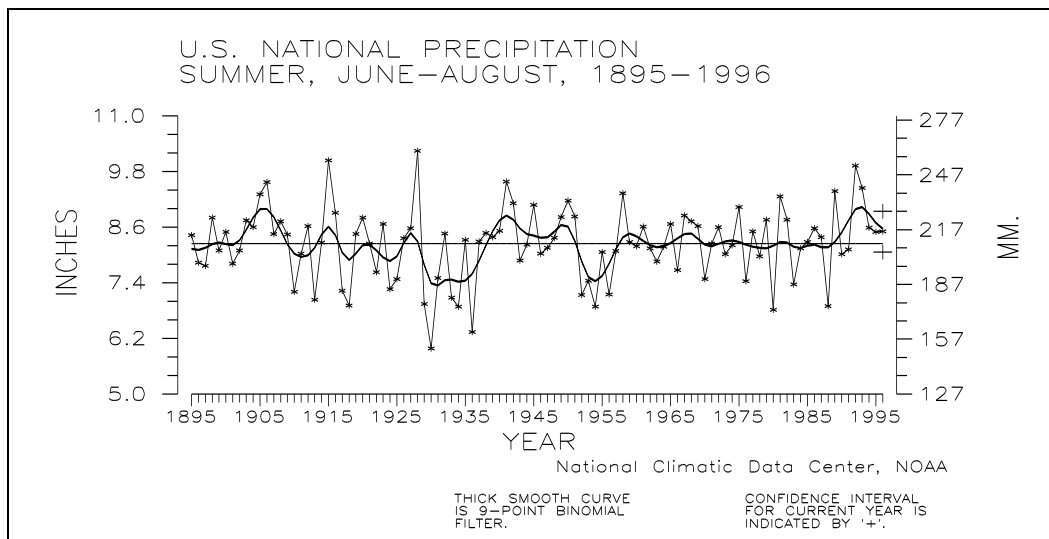
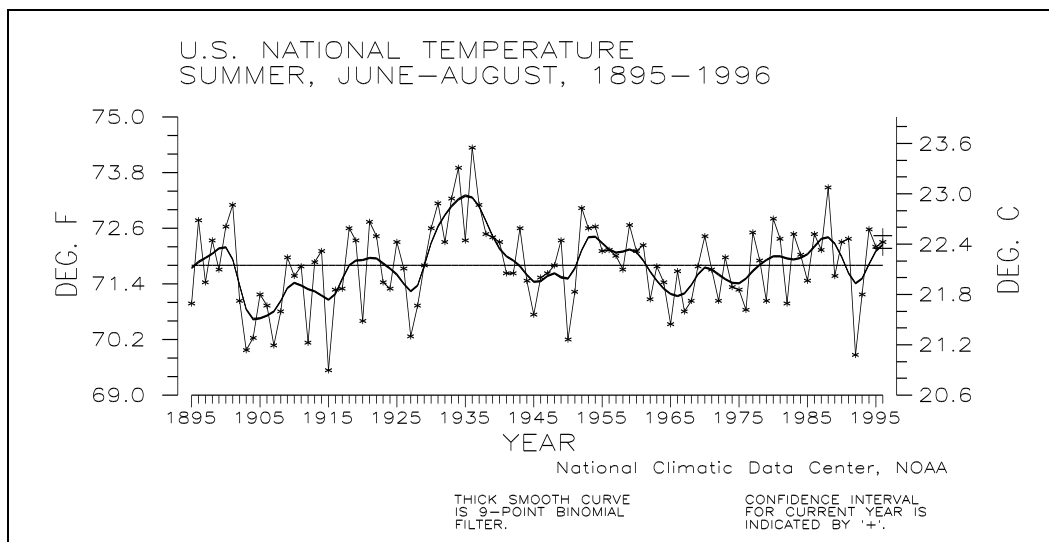


# CLIMATE VARIATIONS BULLETIN



This CLIMATE VARIATIONS BULLETIN (CVB) is a preliminary report that puts current monthly climate anomalies into historical perspective using climate databases archived at the National Climatic Data Center (NCDC). It is issued on a monthly basis. Supplemental sections are included which address seasonal and annual perspectives, when appropriate.

Current data are based on preliminary reports from River Forecast Center stations and First and Second Order airport stations obtained from the National Weather Service (NWS) Climate Prediction Center (formerly, Climate Analysis Center), and preliminary tornado statistics obtained from the NWS National Severe Storms Forecast Center. THE CURRENT DATA SHOULD BE USED WITH CAUTION. These preliminary data are useful for estimating how current anomalies compare to the historical record, however the actual values and rankings for the current year will change as the final data arrive at NCDC and are processed.

The following NCDC datasets are used for the historical data: the climate division drought database (TD-9640), the hurricane datasets (TD-9636 and TD-9697), the tornado dataset (STORM DATA), and the monthly station dataset (LCD supplemental files). It should be noted that the climate division drought database consists of monthly data for 344 climate divisions in the contiguous United States. These divisional values are calculated from the 6000+ station Cooperative Observer network.

If you have access to the Internet, copies of the CVB are available via both the NCDC's World Wide Web (WWW) server and the NCDC's anonymous FTP server.

NCDC's WWW server

URL for the CVB: <http://www.ncdc.noaa.gov/publications/cvb/cvb.html>

NCDC's anonymous FTP server

Machine: <ftp.ncdc.noaa.gov>

Directory: [/pub/data/cvb](ftp://ftp.ncdc.noaa.gov/pub/data/cvb)

If you are a climate researcher and would like to order copies of the historical datasets used to make graphs of the type in this report, call 704-271-4994 or fax a letter to 704-271-4876 or mail a letter to the address given below, ATTN: Research User Services.

All other questions or requests for data should be made by calling 704-271-4800 or sending a fax to 704-271-4876 or by writing to:

National Climatic Data Center, NOAA  
Federal Building  
151 Patton Avenue, Room 120  
Asheville, NC 28801-5001

If you use any of the information from this CVB, please identify "National Climatic Data Center, NOAA" as the source.

# UNITED STATES AUGUST AND SUMMER CLIMATE IN HISTORICAL PERSPECTIVE

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TABLE 1. PRECIPITATION AND TEMPERATURE RANKS, BASED  
ON THE PERIOD 1895-1996. 1 = DRIEST/COLDEST,  
102 = WARMEST FOR AUGUST 1996 TEMPERATURES,  
102 = WETTEST/WARMEST FOR MAR-AUG 1996,  
101 = WETTEST/WARMEST FOR SEP 1995-AUG 1996.  
PRESENT MONTH PRECIPITATION EXPRESSED CATEGORICALLY:  
WET = WET 1/3 OF THE HISTORICAL DISTRIBUTION,  
MID = WITHIN THE MIDDLE 1/3 OF THE DISTRIBUTION,  
DRY = DRY 1/3 OF THE HISTORICAL DISTRIBUTION.

REGION	AUG 1996	MAR-AUG 1996	SEP 1995- AUG 1996
-----	----	-----	-----
PRECIPITATION:			
NORTHEAST	DRY	97	100
EAST NORTH CENTRAL	DRY	43	59
CENTRAL	DRY	91	61
SOUTHEAST	MID	48	71
WEST NORTH CENTRAL	MID	47	61
SOUTH	WET	43	16
SOUTHWEST	DRY	23	9
NORTHWEST	MID	79	97
WEST	DRY	56	53
NATIONAL	MID	62	52
TEMPERATURE:			
NORTHEAST	57	27	20
EAST NORTH CENTRAL	66	7	6
CENTRAL	38	12	9
SOUTHEAST	16	13	12
WEST NORTH CENTRAL	81	28	36
SOUTH	15	52	55
SOUTHWEST	88	98	100
NORTHWEST	75	71	84
WEST	89	97	100
NATIONAL	69	43	53

TABLE 2. EXTREMES, 1961-90 NORMALS, AND 1996 VALUES FOR AUGUST. IT SHOULD BE NOTED THAT THE 1996 VALUES WILL CHANGE DUE TO THE USE OF A DENSER STATION NETWORK.

REGION	PRECIPITATION (INCHES)				1996
	DRIEST	WETTEST	NORMAL		
-----	VALUE	YEAR	VALUE	YEAR	PCPN
-----	-----	-----	-----	-----	-----
NORTHEAST	1.78	1957	8.01	1955	3.87
EAST NORTH CENTRAL	1.35	1930	6.27	1980	3.73
CENTRAL	1.55	1953	6.30	1915	3.71
SOUTHEAST	2.71	1930	9.78	1901	5.19
WEST NORTH CENTRAL	.77	1967	3.03	1968	1.71
SOUTH	1.22	1943	6.06	1915	2.98
SOUTHWEST	.56	1962	3.25	1963	1.96
NORTHWEST	.10	1967	2.98	1968	.96
WEST	.00	1911	2.01	1983	.50
NATIONAL	1.76	1929	3.55	1977	2.66

\* PRELIMINARY VALUE, CONFIDENCE  
INTERVAL + OR - .16 INCHES

REGION	TEMPERATURE (DEGREES F)				1996
	COLDEST	WARMEST	NORMAL		
-----	VALUE	YEAR	VALUE	YEAR	TEMP
-----	-----	-----	-----	-----	-----
NORTHEAST	62.9	1903	71.9	1937	67.4
EAST NORTH CENTRAL	63.0	1915	74.6	1947	67.6
CENTRAL	68.9	1915	79.8	1936	73.4
SOUTHEAST	75.8	1967	81.3	1900	78.0
WEST NORTH CENTRAL	63.0	1911	73.0	1983	67.4
SOUTH	76.2	1992	84.5	1943	80.2
SOUTHWEST	68.1	1968	74.6	1994	71.3
NORTHWEST	59.2	1899	69.4	1967	65.2
WEST	67.2	1899	75.7	1958	72.4
NATIONAL	70.0	1927	75.4	1983	72.3

\* PRELIMINARY VALUE, CONFIDENCE  
INTERVAL + OR - .2 DEG. F.

TABLE 3. TEMPERATURE AND PRECIPITATION RANKINGS FOR  
 JUN-AUG 1996, BASED ON THE PERIOD 1895-1996.  
 1 = COLDEST, 102 = HOTTEST.  
 PRECIPITATION EXPRESSED CATEGORICALLY:  
 WET = WET 1/3 OF THE HISTORICAL DISTRIBUTION,  
 MID = WITHIN THE MIDDLE 1/3 OF THE DISTRIBUTION,  
 DRY = DRY 1/3 OF THE HISTORICAL DISTRIBUTION.

REGION -----	PRECIPITATION -----	TEMPERATURE -----
NORTHEAST	WET	52
EAST NORTH CENTRAL	MID	41
CENTRAL	MID	29
SOUTHEAST	DRY	30
WEST NORTH CENTRAL	DRY	81
SOUTH	WET	44
SOUTHWEST	MID	100
NORTHWEST	DRY	85
WEST	DRY	96
NATIONAL	MID	69

TABLE 4. EXTREMES, 1961-90 NORMALS, AND 1996 VALUES  
FOR JUN-AUG

REGION	PRECIPITATION (INCHES)				NORMAL PCPN	1996 PCPN
	DRIEST VALUE	YEAR	WETTEST VALUE	YEAR		
NORTHEAST	7.36	1913	15.15	1903	11.52	13.35
EAST NORTH CENTRAL	6.51	1910	16.40	1993	11.23	11.15
CENTRAL	6.32	1930	17.35	1958	11.91	12.37
SOUTHEAST	10.63	1980	21.76	1906	15.61	14.73
WEST NORTH CENTRAL	3.74	1917	12.11	1993	6.46	5.46
SOUTH	5.31	1954	13.55	1950	9.67	12.36
SOUTHWEST	2.75	1900	7.81	1921	4.72	4.80
NORTHWEST	.80	1919	5.47	1983	3.17	2.03
WEST	.24	1905	2.66	1913	1.30	.52
NATIONAL	5.98	1930	10.24	1928	8.24	8.50*

\* PRELIMINARY VALUE, CONFIDENCE  
INTERVAL + OR - .44 INCHES

REGION	TEMPERATURE (DEGREES F)				NORMAL TEMP	1996 TEMP
	COLDEST VALUE	YEAR	WARMEST VALUE	YEAR		
NORTHEAST	63.8	1903	70.4	1949	67.0	67.3
EAST NORTH CENTRAL	63.0	1915	71.5	1988	67.7	67.4
CENTRAL	70.5	1915	78.1	1934	73.3	72.9
SOUTHEAST	75.5	1967	80.1	1952	77.5	77.4
WEST NORTH CENTRAL	61.5	1915	71.4	1936	66.7	67.4
SOUTH	77.3	1992	83.8	1934	79.7	79.8
SOUTHWEST	68.2	1907	74.1	1994	71.0	72.6
NORTHWEST	59.5	1993	67.2	1961	63.7	64.5
WEST	68.1	1907	74.3	1918	71.3	73.3
NATIONAL	69.5	1915	74.3	1936	71.7	72.3*

\* PRELIMINARY VALUE, CONFIDENCE  
INTERVAL + OR - .1 DEG. F.

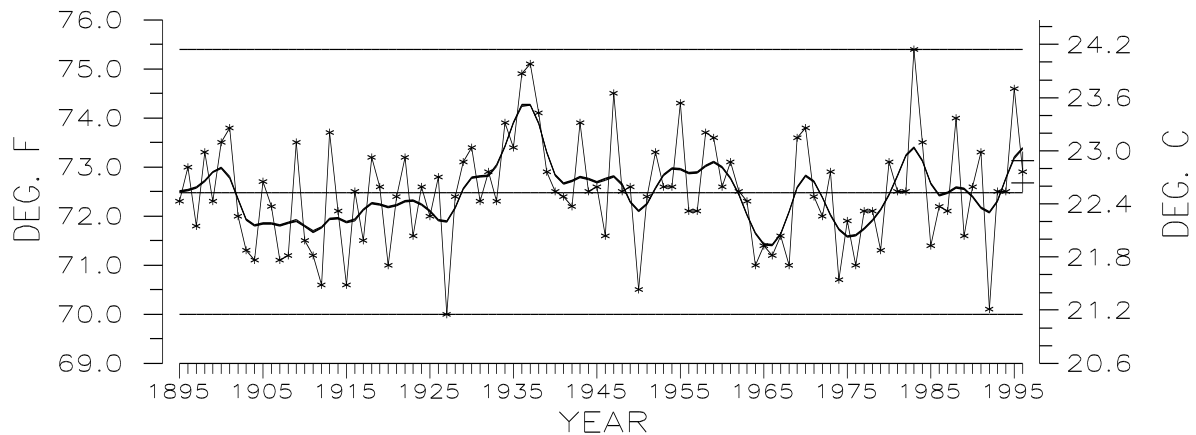
TABLE 5.

STATISTICS FOR SELECTED RIVER BASINS: PRECIPITATION RANKING FOR JUN-AUG 1996, WHERE RANK OF 1 = DRIEST, 102 = WETTEST, BASED ON THE PERIOD 1895 TO 1996, AREAL PERCENT OF THE BASIN EXPERIENCING SEVERE OR EXTREME LONG-TERM (PALMER) DROUGHT, AND AREAL PERCENT OF THE BASIN EXPERIENCING SEVERE OR EXTREME LONG-TERM (PALMER) WET CONDITIONS, AS OF AUGUST 1996. RIVER BASIN REGIONS AS DEFINED BY THE U.S. WATER RESOURCES COUNCIL.

RIVER BASIN -----	PRECIPITATION RANK -----	% AREA DRY -----	% AREA WET -----
MISSOURI BASIN	41	.0%	44.2%
PACIFIC NORTHWEST BASIN	20	.0%	52.0%
CALIFORNIA RIVER BASIN	26	28.8%	21.3%
GREAT BASIN	14	50.2%	18.2%
UPPER COLORADO BASIN	15	25.0%	.0%
LOWER COLORADO BASIN	27	89.3%	.0%
RIO GRANDE BASIN	91	9.4%	.0%
ARKANSAS-WHITE-RED BASIN	90	3.8%	1.8%
TEXAS GULF COAST BASIN	92	16.3%	.0%
SOURIS-RED-RAINY BASIN	17	.0%	26.6%
UPPER MISSISSIPPI BASIN	31	.0%	2.4%
LOWER MISSISSIPPI BASIN	77	.0%	.0%
GREAT LAKES BASIN	86	.0%	25.6%
OHIO RIVER BASIN	73	.0%	16.5%
TENNESSEE RIVER BASIN	79	.0%	.0%
NEW ENGLAND BASIN	79	.0%	54.7%
MID-ATLANTIC BASIN	85	.0%	34.1%
SOUTH ATLANTIC-GULF BASIN	23	.0%	.0%



# U.S. NATIONAL TEMPERATURE AUGUST, 1895-1996



National Climatic Data Center, NOAA

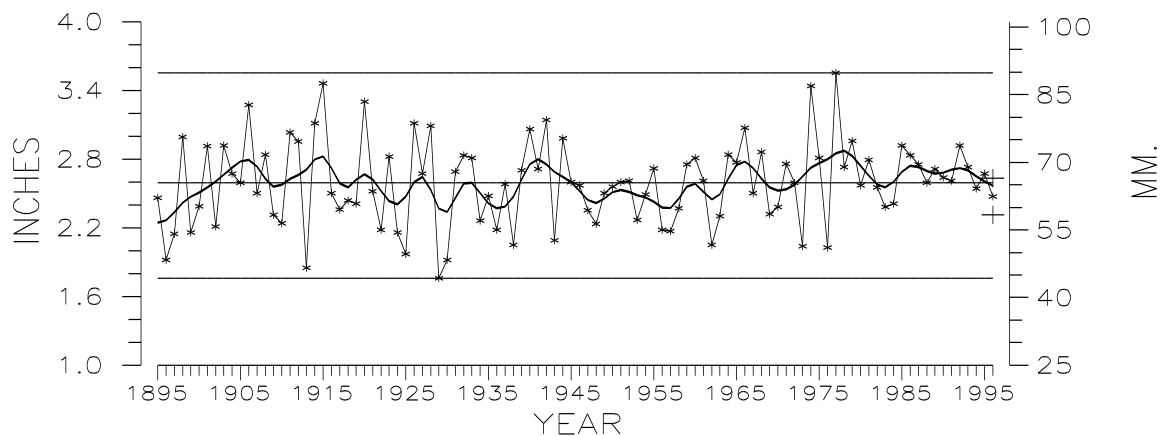
STRAIGHT HORIZONTAL LINES ARE:  
MAXIMUM VALUE (TOP),  
LONG-TERM AVERAGE (MIDDLE),  
MINIMUM VALUE (BOTTOM)

THICK SMOOTH CURVE  
IS 9-POINT BINOMIAL  
FILTER.

CONFIDENCE INTERVAL  
FOR CURRENT YEAR IS  
INDICATED BY '+'.  
+

Figure 1: Preliminary data for August 1996 indicate that temperature averaged across the contiguous United States was above the long-term mean ranking as the 34th warmest August since 1895. About nine percent of the country averaged much warmer than normal while about five percent of the country averaged much cooler than normal.

# U.S. NATIONAL PRECIPITATION AUGUST, 1895-1996



National Climatic Data Center, NOAA

STRAIGHT HORIZONTAL LINES ARE:  
MAXIMUM VALUE (TOP),  
LONG-TERM AVERAGE (MIDDLE),  
MINIMUM VALUE (BOTTOM)

THICK SMOOTH CURVE  
IS 9-POINT BINOMIAL  
FILTER.

CONFIDENCE INTERVAL  
FOR CURRENT YEAR IS  
INDICATED BY '+'.  
+

Figure 2: August 1996 was the 36th driest such month since 1895. About thirteen percent of the country experienced much drier than normal conditions while about ten percent was much wetter than normal.

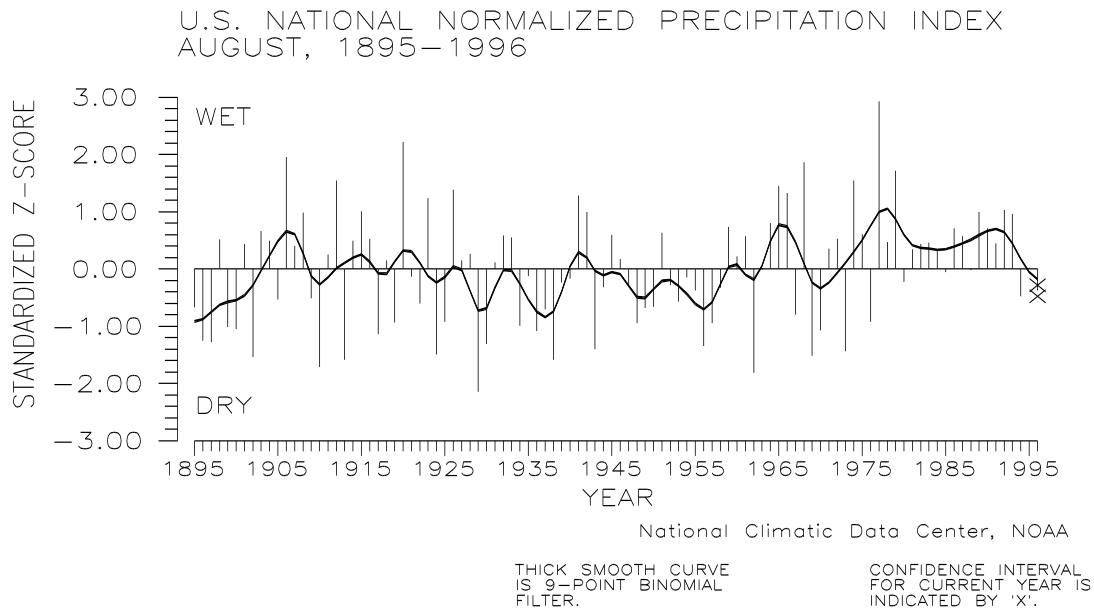


Figure 3: The preliminary national standardized precipitation index ranked August 1996 as the 36th driest such month on record. This standardized z-score is estimated to be accurate to within 0.102 index units and its confidence interval is shown as an 'X'.

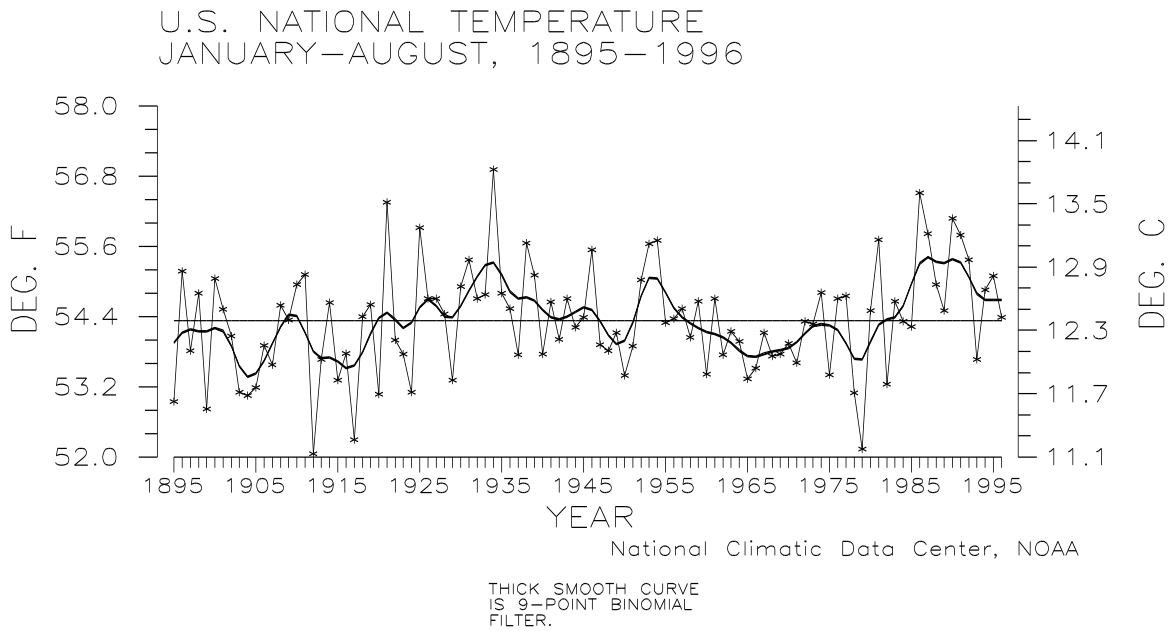


Figure 4: National averaged temperature for the eight-month period was at the long-term mean, ranking as the 50th warmest January–August since 1895.

# SOUTHWEST REGION TEMPERATURE AUGUST, 1895–1996

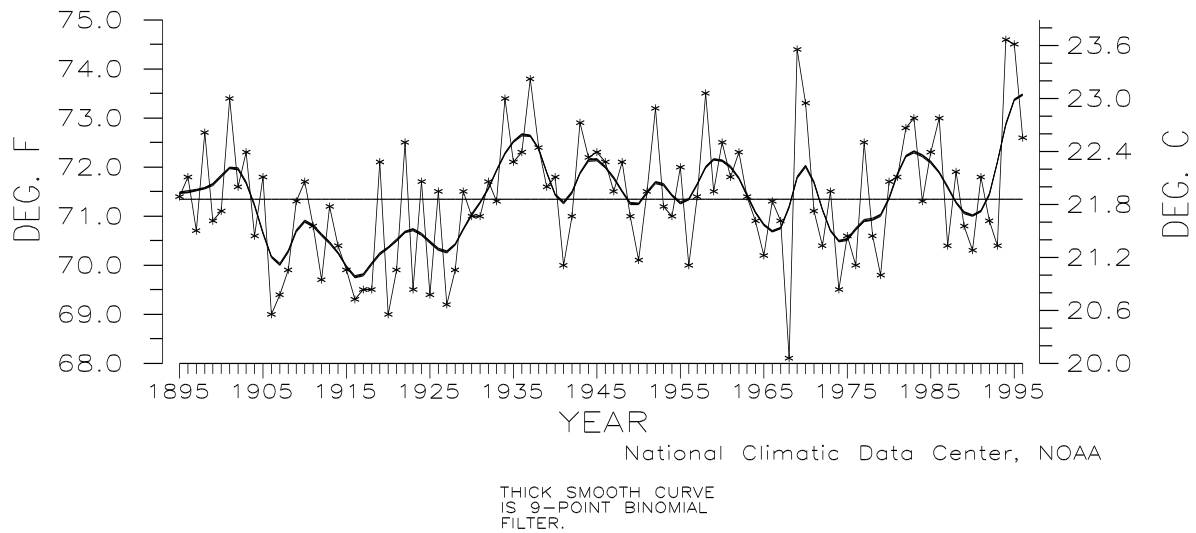


Figure 5: August 1996 was the 15th warmest such month since 1895 for the Southwest region and makes three consecutive such months of much above normal temperatures. The six-month period (Mar-Aug) ranked as the fifth warmest such period, while the twelve-month (Sep 1995-Aug 1996) period ranked as the third warmest such period since 1895 (Table 1).

# SOUTH REGION TEMPERATURE AUGUST, 1895–1996

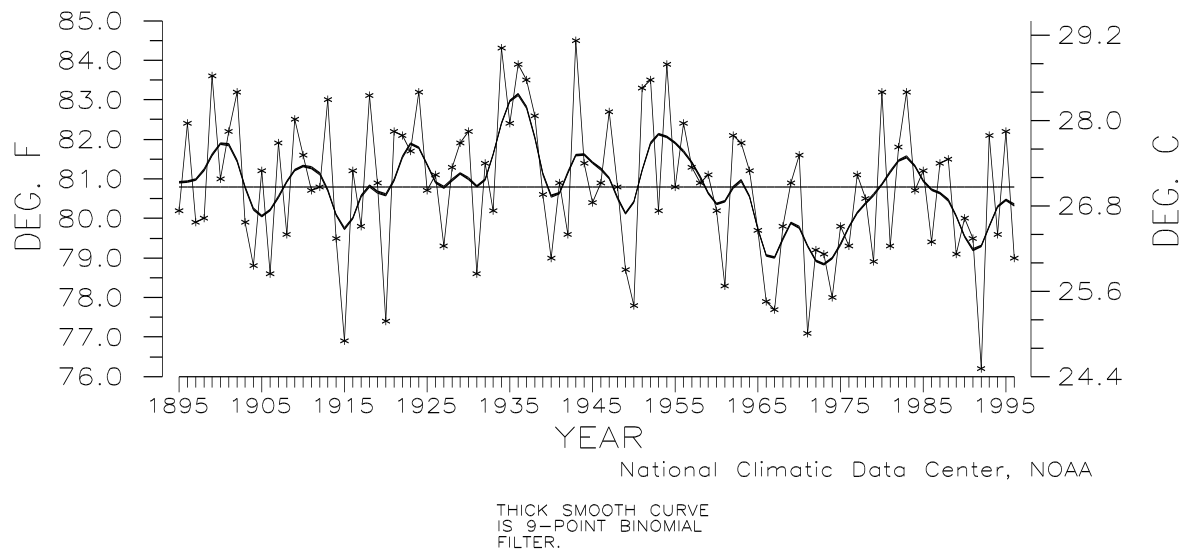
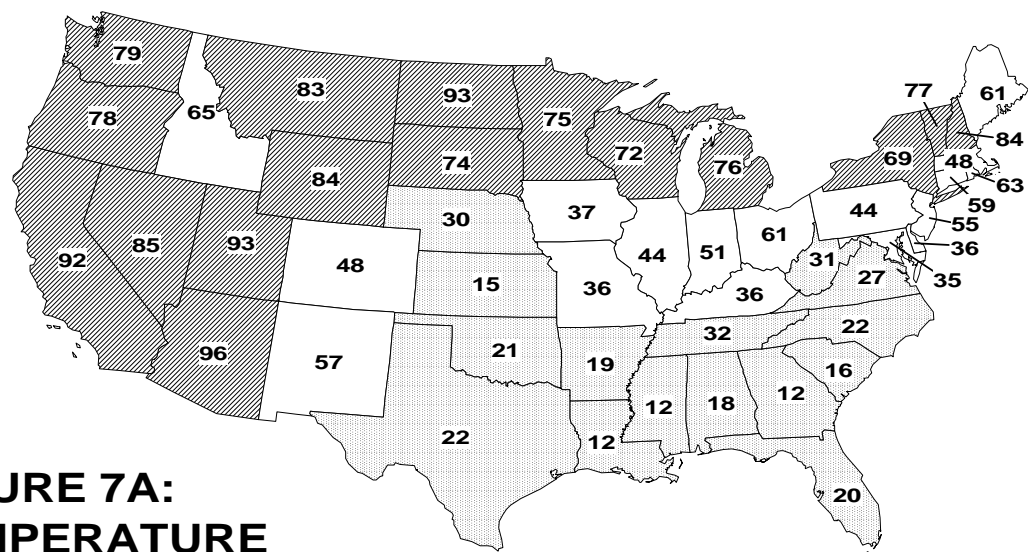


Figure 6: August 1996 was the 15th coolest such month since 1895 for the South region. Both the six-month (March-August) and the twelve-month (September 1995-August 1996) periods ranked in the middle third of the historical distribution (Table 1).

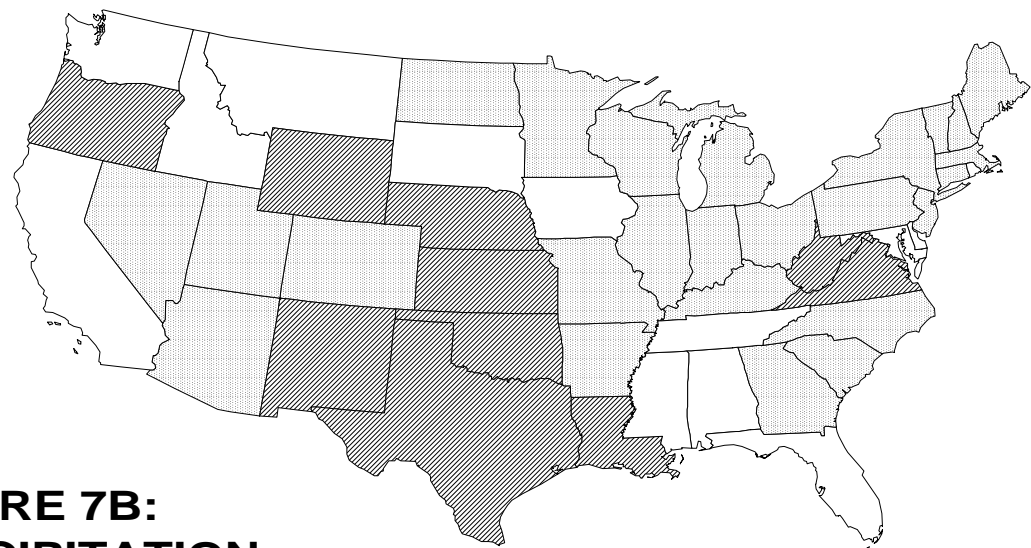
# AUGUST 1996 STATEWIDE RANKS



**FIGURE 7A:  
TEMPERATURE**

1 = Coldest  
102 = Warmest

Temperature Ranks for the contiguous United States. Each state is ranked based on its data from 1895-1996. States having a rank in the warm third or cool third of their historical distribution are shaded.



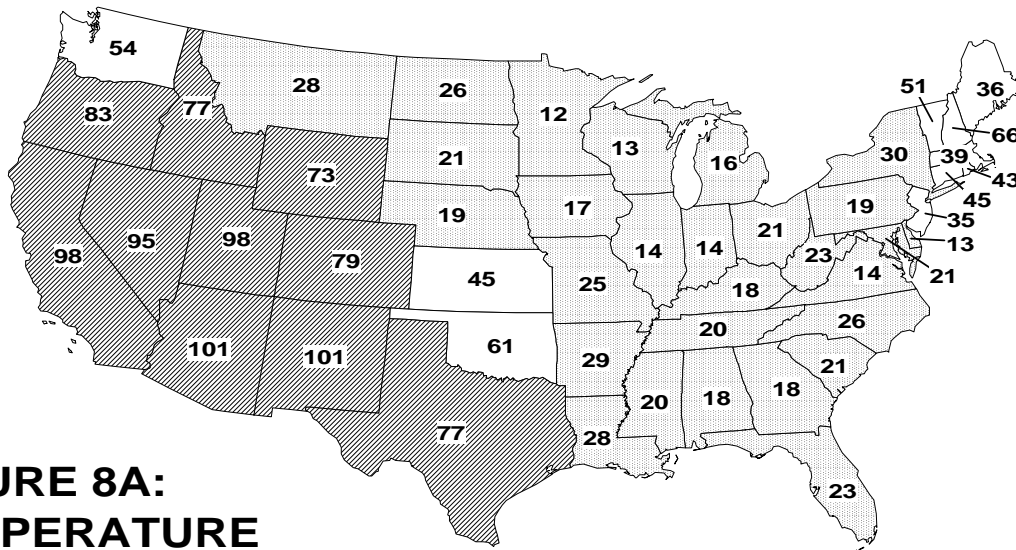
**FIGURE 7B:  
PRECIPITATION**

National Climatic Data Center, NOAA

Wet Third  
Middle Third  
Dry Third

Precipitation Rank Categories for the contiguous United States. Each state is ranked based on its data from 1895-1996. States having a rank in the wet third or dry third of their historical distribution are shaded.

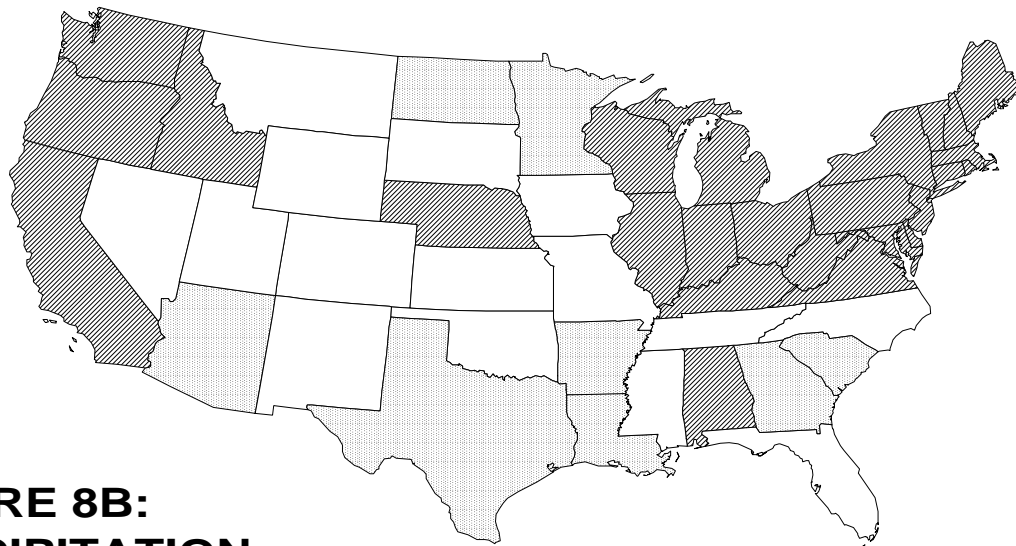
# JANUARY-AUGUST, 1996 STATEWIDE RANKS



**FIGURE 8A:  
TEMPERATURE**

1 = Coldest  
102 = Warmest

Temperature Ranks for the contiguous United States. Each state is ranked based on its data from 1895-1996. States having a rank in the warm third or cool third of their historical distribution are shaded.



**FIGURE 8B:  
PRECIPITATION**

Wet Third  
Middle Third  
Dry Third

Precipitation Rank Categories for the contiguous United States. Each state is ranked based on its data from 1895-1996. States having a rank in the wet third or dry third of their historical distribution are shaded.

National Climatic Data Center, NOAA

Figure 7A shows, in illustrative map form, the August 1996 temperature rankings for the 48 contiguous states. Three states (AZ, ND, & UT) were within the top ten warmest while an additional thirteen ranked within the warm third. No states ranked within the top ten cool portion of the historical distribution for August, while fifteen others ranked within the cool third of the distribution.

August 1996 state categorical ranks for precipitation are shown in Figure 7B. Preliminary data indicate that 25 states ranked within the dry third of the historical distribution for August 1996, while ten states ranked within the wet third of the distribution. ***It should be noted that these August state categorical precipitation ranks are preliminary and should be used with considerable caution due to the high variability of precipitation on a small space and time scale.***

Figure 8A shows the year-to-date temperature rankings for the 48 contiguous states. The 1996 year-to-date is the second warmest such period on record for Arizona and New Mexico, fifth warmest for California and Utah, and the eighth warmest such period for Nevada. Five other states ranked within the warm third of the distribution. Twenty-eight states ranked within the cool third of the distribution for the year-to-date. No state was with the top ten cool portion of the historical distribution.

January through August state categorical ranks for precipitation are shown in Figure 8B. Preliminary data indicate that 23 states ranked within the wet third of the historical distribution, while eight states ranked within the dry third of the distribution.

Figure 21A shows the Summer (June-August) temperature ranking for the contiguous United States. The three-month period was the third warmest such period on record for both Arizona and Utah, sixth warmest such period for Nevada, seventh warmest for Wyoming, and the tenth warmest summer season on record for California and New Mexico. Seven other states ranked within the warm third of the distribution. No states ranked within the top ten coolest for the summer season however, seventeen states ranked with the cool third of the historical distribution.

Summer state categorical ranks for precipitation are shown in Figure 21B. Twenty states ranked within the wet third of the historical distribution while fifteen states ranked within the dry third of the distribution.

***It should be emphasized that all of the temperature and precipitation ranks on these maps and in Table 1 are based on preliminary data. The ranks will change when the final data are processed.***

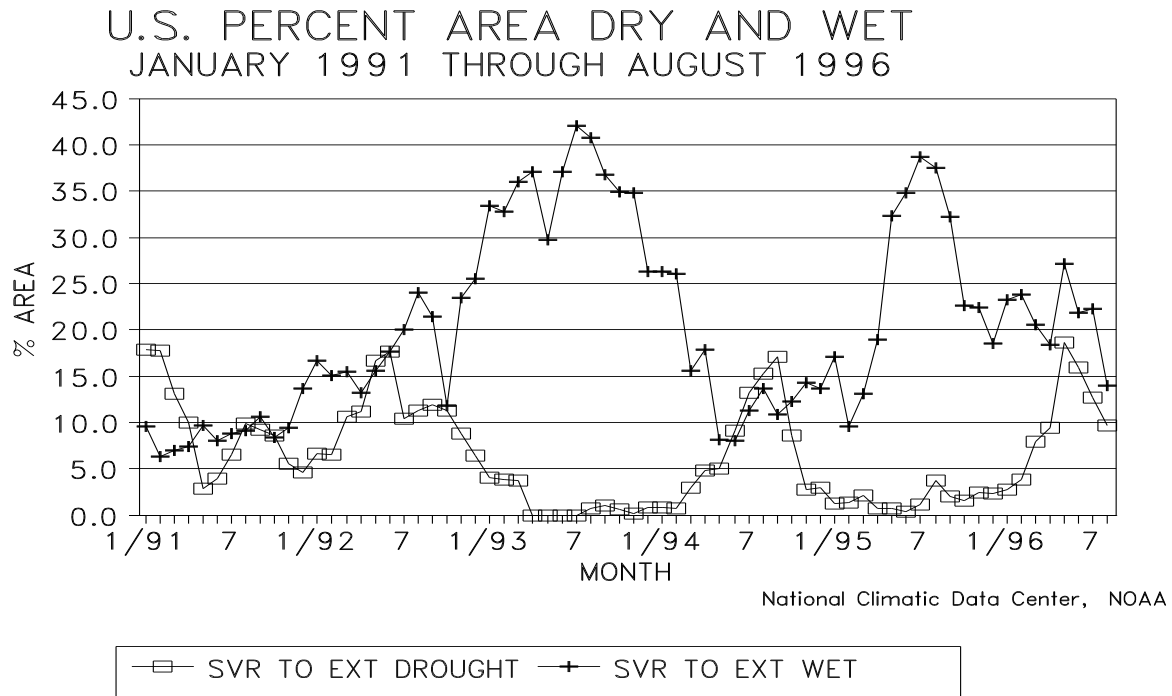


Figure 9: Long-term drought coverage (as measured by the Palmer Drought Index) during August decreased slightly while the percent area of the country experiencing severe to extreme wetness also fell in coverage. About ten percent of the country experienced severe to extreme drought conditions while 14% percent was in severe to extreme wetness by the end of August 1996. Core wet areas included portions of the Northeast, mid-Atlantic, upper Mid-West, northern Great Plains, northern Rockies, and the Pacific Northwest while dry areas included much of the Desert Southwest, and parts of the Great Basin and southern Plains.

### PALMER DROUGHT INDEX, 1/1901 – 8/1996 TEXAS

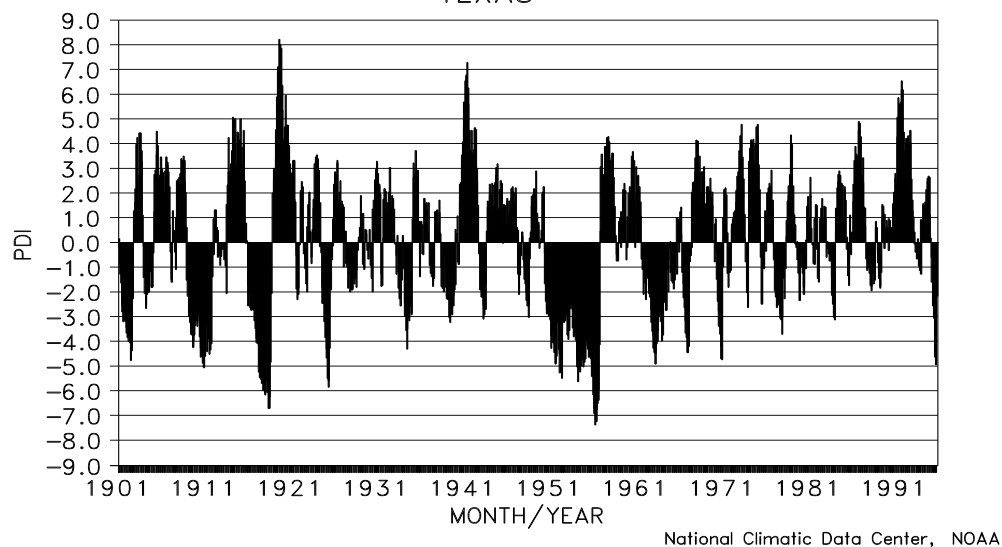


Figure 10: The rapid onset of recent drought conditions in Texas paralleled that seen in the 1950's and 1960's. Convective rains during August 1996 provided relief to most drought-parched areas, especially the north-central portions, but the statewide Palmer Drought Index for Texas still remained well within the severe drought category (near -3).

## % OF NORMAL MONTHLY PRECIPITATION JANUARY 1995 – AUGUST 1996

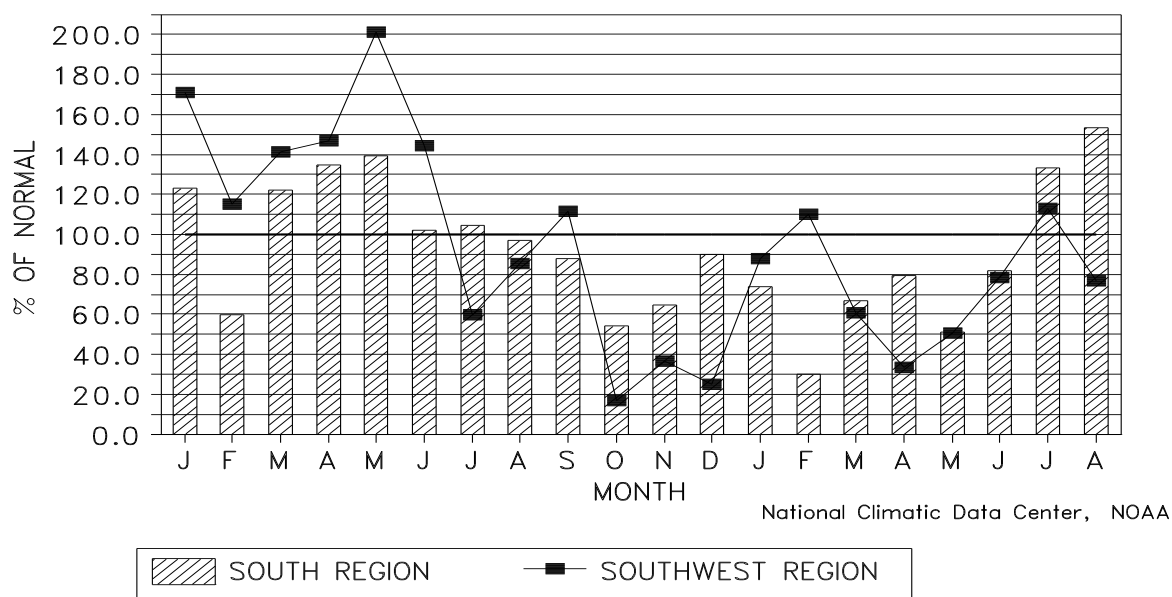


Figure 11: The South region exceeded 100 percent of the normal monthly rainfall for the second month in a row during August 1996. The Southwest region had been running monthly deficits consistently (except for February 1996) since October 1995 until July 1996 when rainfall exceeded the monthly normal. The August 1996 rainfall for the Southwest region resumed the trend of negative departures.

## WEST REGION TEMPERATURE JANUARY–AUGUST, 1895–1996

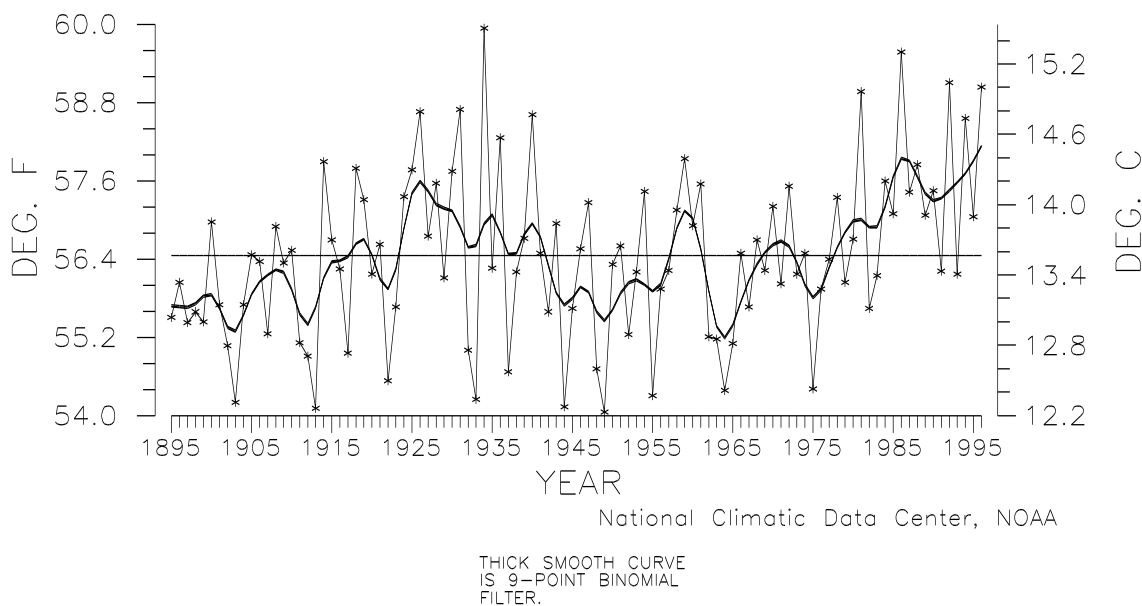


Figure 12: January-August 1996 was the fourth warmest such period since 1895 for the West Region. Twelve of the last sixteen such periods have averaged above to much above the long-term mean for temperature.



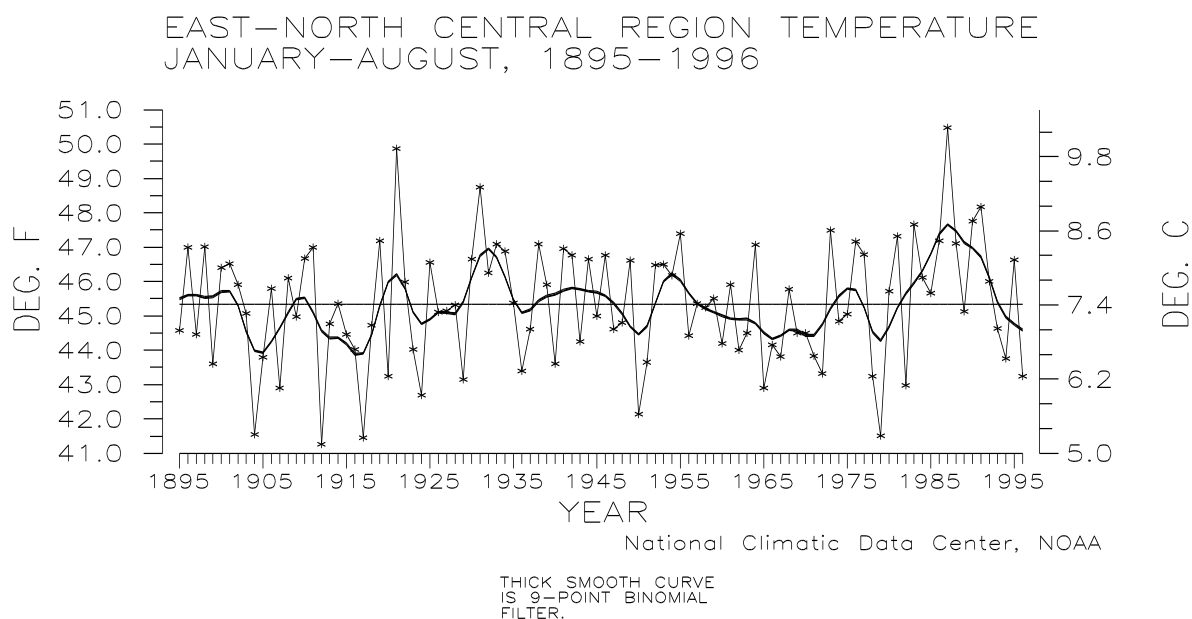


Figure 13: Preliminary data indicate that the January-August 1996 period was the 12th coolest such period on record for the East-North Central Region.

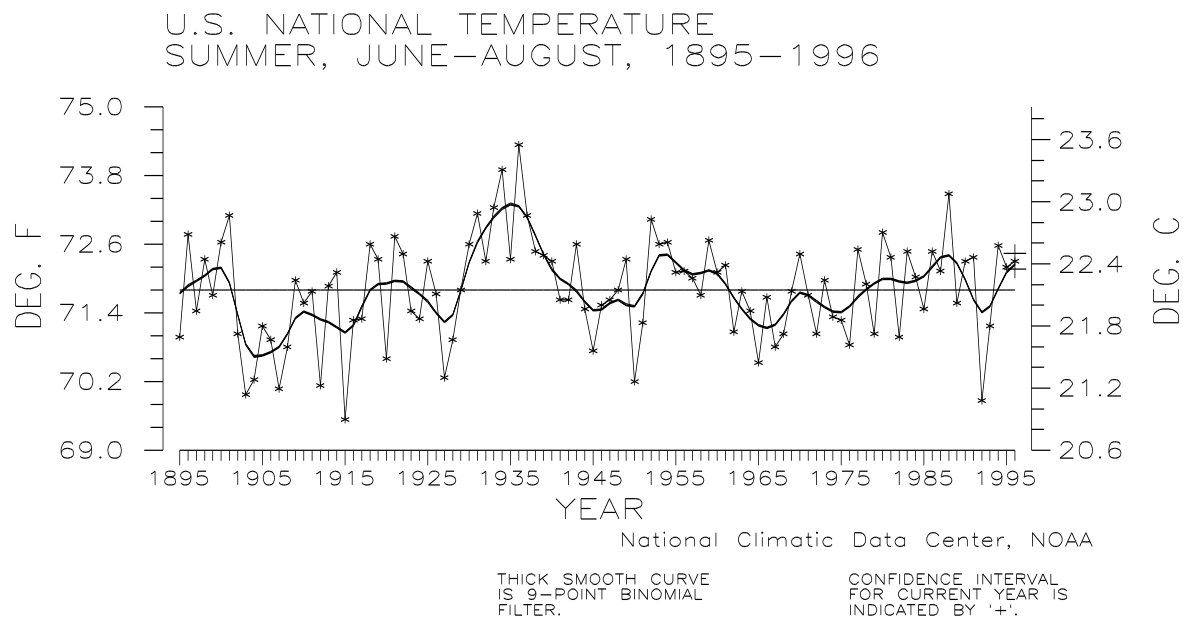


Figure 14: The 1996 summer season, June-August, was only slightly above the long-term mean and ranked as the 34th warmest such season since 1895.

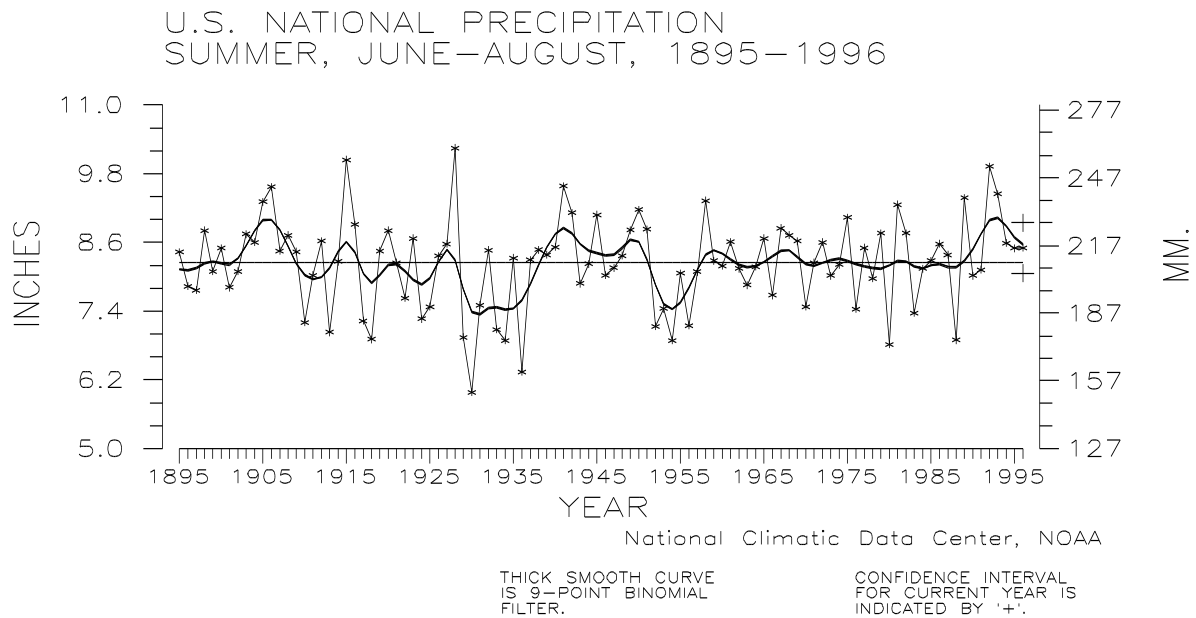


Figure 15: Preliminary 1996 precipitation data for summer (June–August) ranked this year's season as the 38th wettest since 1895. The last eight such seasons have averaged near to considerably above the long-term mean.

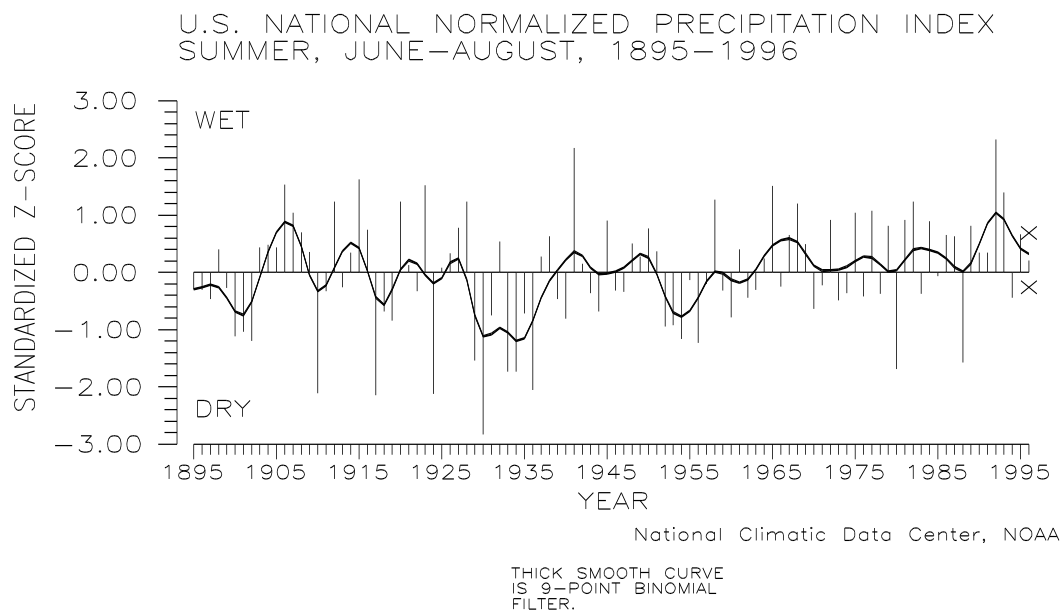


Figure 16: The 1996 summer (June–August) season was near the long-term mean and ranked as the 49th wettest such season on record. This standardized z-score is estimated to be accurate to within 0.473 index units and its confidence interval is shown as an 'X'.

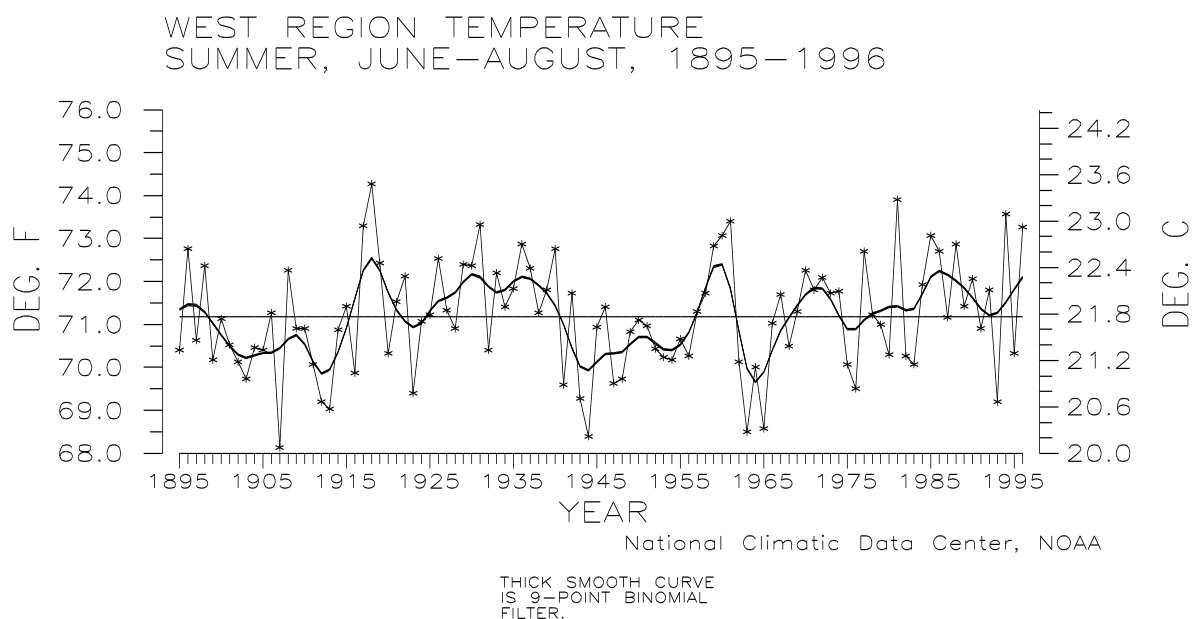


Figure 17: Summer 1996 was the seventh warmest such season since 1895 for the West Region based upon preliminary data.

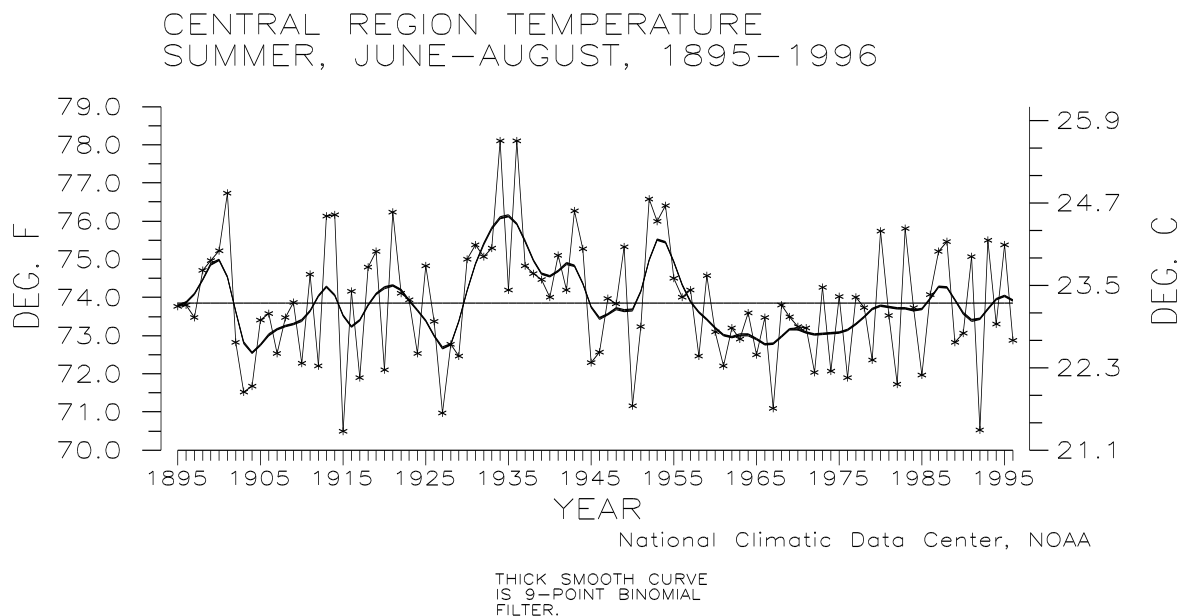


Figure 18: Summer 1996 was the 29th coolest summer on record for the Central Region.

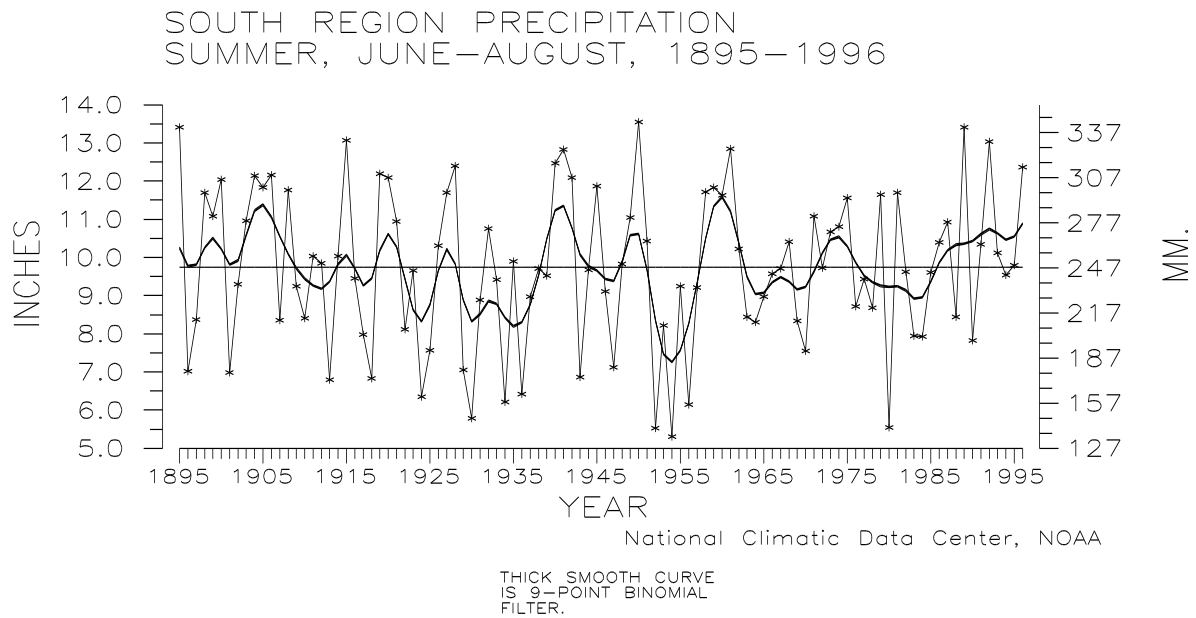


Figure 19: Summer 1996 was the tenth wettest such season since 1895 for the South Region, based upon preliminary data. As recently as June, the majority of the region was suffering from severe to extreme drought.

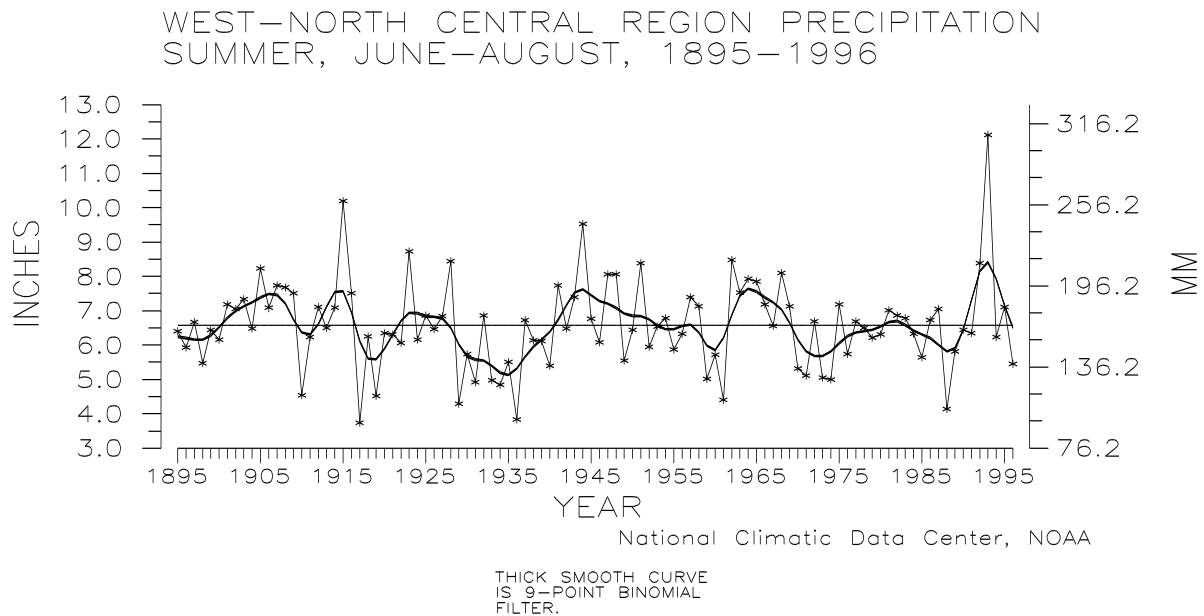
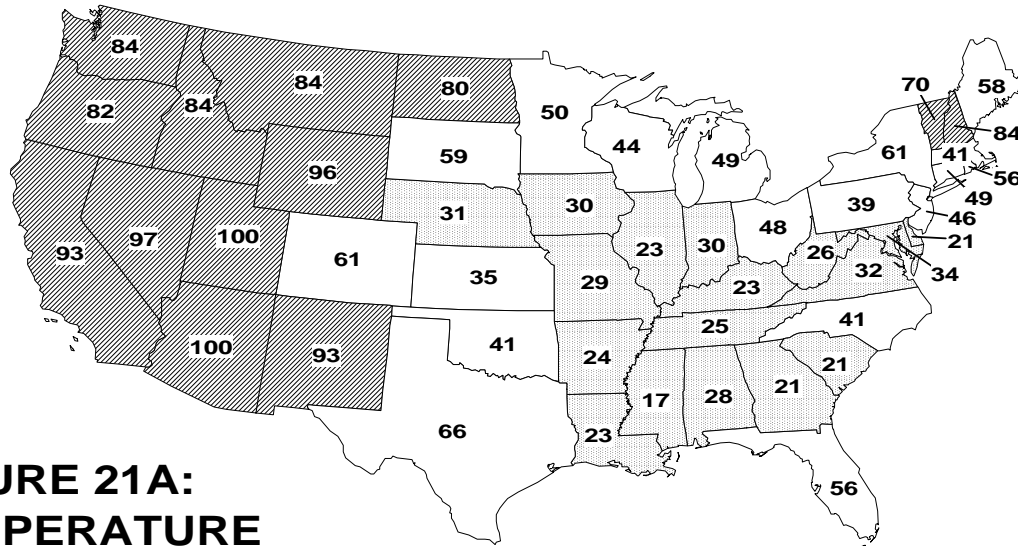


Figure 20: Summer 1996 was the 17th driest summer on record for the West-North Central Region. It was only four years ago that the region experienced the wettest summer this century.

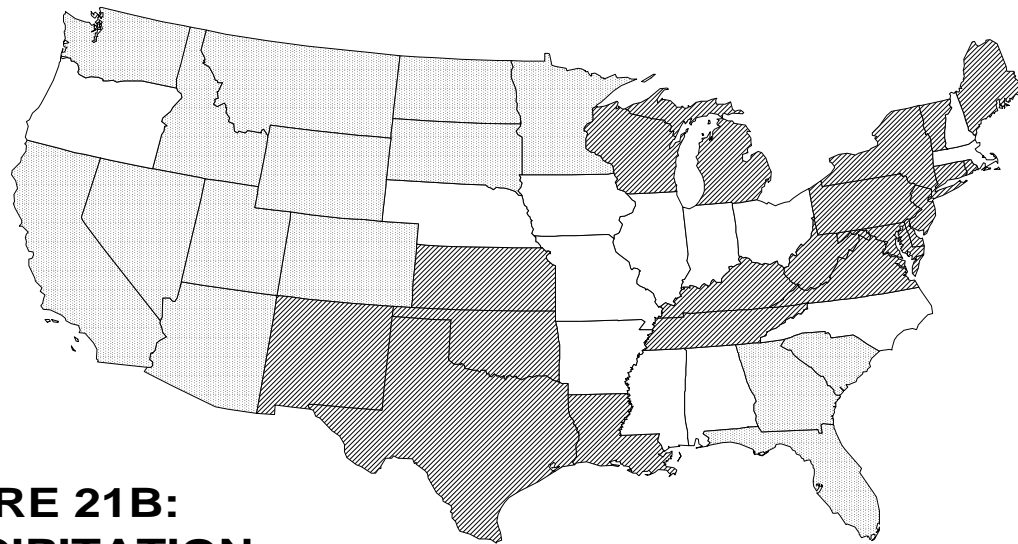
# SUMMER, JUNE-AUG, 1996 STATEWIDE RANKS



**FIGURE 21A:  
TEMPERATURE**

1 = Coldest  
102 = Warmest

Temperature Ranks for the contiguous United States. Each state is ranked based on its data from 1895-1996. States having a rank in the warm third or cool third of their historical distribution are shaded.



**FIGURE 21B:  
PRECIPITATION**

National Climatic Data Center, NOAA

Wet Third  
Middle Third  
Dry Third

Precipitation Rank Categories for the contiguous United States. Each state is ranked based on its data from 1895-1996. States having a rank in the wet third or dry third of their historical distribution are shaded.

